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# The Role of Female Directors on Probability of Financial Distress

**Bella Christinna Santosa, Tania Gianina,**
**Yang Elvi Adelina, Vania Pradipta Gunawan**
*Sekolah Bisnis dan Ekonomi Universitas Prasetiya Mulya,*
*BSD City Kavling Edutown I.1, Jl. BSD Raya Utama, BSD City, Tangerang, 15339*

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## ABSTRACT

This study aims to determine the effect of female directors on the probability of financial distress in companies listed on the Indonesia Stock Exchange from 2016 to 2021, except in the financial industry, where the total number of company data observations is 2,840. The study used binary logistic regression analysis and penalized maximum likelihood. The study's results found that female directors do not affect the probability of financial distress in the company. A robustness test is also conducted to compare the consistency of the results between SOEs and non-SOEs with the number of observations for each type of company: 114 observations and 2,726 observations. The findings are consistent, showing that female directors do not affect the likelihood of financial distress in SOEs or non-SOEs. Therefore, this study could provide practitioners with updated understandings and perspectives regarding the existence of female directors in companies that show the proportion of female directors is still low, so the effect on the probability of a company's financial distress has not been seen.

***Kata kunci:***
*Direksi Wanita,*
*Kesulitan Keuangan,*
*Teori Kepemimpinan Wanita,*
*Teori Agensi, Teori Ketergantungan Sumber Daya*

## ABSTRAK

*Penelitian ini bertujuan untuk mengetahui pengaruh direksi wanita terhadap probabilitas kesulitan keuangan pada perusahaan-perusahaan yang terdaftar di Bursa Efek Indonesia dari tahun 2016 sampai dengan tahun 2021, kecuali industri keuangan dengan jumlah observasi data perusahaan adalah 2.840 observasi. Penelitian menggunakan analisis regresi logistik biner dan penalized maximum likelihood. Hasil penelitian menemukan bahwa direksi wanita tidak mempengaruhi probabilitas kesulitan keuangan di perusahaan. Uji robustness juga dilakukan untuk membandingkan konsistensi hasil antara BUMN dan non-BUMN dengan jumlah observasi masing-masing data perusahaan adalah 114 observasi dan 2.726 observasi. Hasil yang ditemukan konsisten, yaitu tidak adanya pengaruh direksi wanita terhadap probabilitas kesulitan keuangan pada BUMN maupun non-BUMN. Dengan demikian, penelitian ini dapat memberikan pemahaman dan pandangan baru kepada praktisi terkait keberadaan direksi wanita di perusahaan yang menunjukkan bahwa proporsi direksi wanita masih minim sehingga belum terlihat pengaruhnya terhadap probabilitas kesulitan keuangan perusahaan.*

**Corresponding Author:**
tania.gianina@gmail.com

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## INTRODUCTION

Gender equality is one of the issues getting discussed in various countries around the world because it involves justice and human rights. The United Nations (UN) has raised this issue by including gender equality in International Human Rights Law and incorporating gender equality into the fifth Sustainable Development Goal by 2015 (United Nations, 2022). Appointing women to a company's Boards of Directors is one way to achieve gender equality. However, there is no law from the Indonesian government requiring companies to have female directors until 2021. Meanwhile, many companies have already appointed women to their Boards of Directors. According to Grant Thornton International data (in Setiawan, 2020), Indonesia and Mexico are the fourth-ranked countries with the largest percentage of women in senior management positions, at 37%. Furthermore, the Minister of SOEs, Mr. Erick Thohir, is committed to increasing women's participation in the ranks of the BOC (Board of Commissioners), BOD (Board of Directors), and BOD-1 (one level below the Board of Directors) in SOEs, with a target of 15% in 2021 and 25% in 2023.

The target was set as a result of previous studies that showed the participation of female directors could enhance business performance. The goal was established following the findings of a survey in 2019 by the International Labour Organization (ILO) of 400 Indonesian companies, which revealed that 77% of companies enjoy the benefits of having female directors because female directors can stimulate efforts to increase company profits and productivity. Research conducted by the ILO in association with Investing in Women, the Business Coalition for the Empowerment of Indonesian Women (IBCWE), and the Employers' Association in Indonesia (APINDO) also show that the participation of female directors in the workplace can improve profits and productivity as well as innovation and creativity. However, research in Indonesia shows that the presence of women on the Board of Directors has no effect or negative impact on company performance (Fambudi & Fitriani, 2019; Iswadi, 2016). Therefore, this issue becomes a question of whether the purpose of appointing women to be part of the Board of Directors is to meet the target of gender equality to fulfill the Sustainable Development Goals or whether there is evidence of a significant influence on the performance of the companies.

In recent years, a lot of corporations, notably SOEs, have been in a state of financial distress. According to data from the Ministry of Finance (Santoso, 2019), nine state-owned corporations in various industrial sectors and three state-owned enterprises in agriculture are facing bankruptcy. Problems with liquidity, leverage, and capital structure are the main causes of SOEs being in this situation (Aviannie et al., 2020; Gunawan et al., 2019; Mauda & Serly, 2021; Santoso, 2019). State-owned enterprises are not the only ones experiencing financial distress. Several private companies, like PT Sariwangi Agricultural Estate Agency and Nyonya Meneer, are also

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experiencing financial distress. The two companies' financial troubles were liquidity issues and large debt amounts. Each company owes IDR1.5 trillion and IDR267 billion in debt (Batam News, 2018).

In these circumstances, it is expected that the appointment of female directors will lessen a company's financial distress. This is related to differences in decision-making behavior between men and women. Numerous studies from other countries show that men and women behave differently in terms of risk aversion, self-confidence, and mutual trust, all of which have an indirect impact on financial decision-making (García & Herrero, 2021). The choice of the type of loan or source of corporate funding is one example of such decision-making. Li and Zhang (2019) claim that short-term loans are frequently chosen by female directors because they can be an effective corporate governance mechanism for monitoring. This opinion is consistent with previous of other research that reveals that women typically display risk-averse behavior, which is reflected in their loan selection (Cho et al., 2021; García & Herrero, 2021; La Rocca et al., 2020; Mohsni et al., 2021). As the number of loans might affect the firm's financial issues, risk-averse behavior reduces the likelihood that the company will file for bankruptcy. However, other research has shown that the financial distress of the company is not affected by the presence of female directors (Sila et al., 2016).

The gap in past research is an interesting topic for further exploration, especially given the large number of publications that used research samples from Europe rather than Indonesia. As a result, this study will examine the impact of female directors on the probability of financial distress in non-financial companies in Indonesia. Furthermore, due to the differences in roles between the two types of companies, this study also compares the influence of female directors in state-owned enterprises with the influence of female directors in non-SOEs. On the one hand, since the Indonesian government signed the SDG Agenda, state-owned enterprises have played an important role in setting an example for the community in terms of achieving the SDGs. Additionally, given the commitment made by the Ministry of SOEs itself to increase the number of female directors, it is an intriguing topic to delve deeper into because it is not certain whether the addition of action requires it, and thus the company can participate in realizing these targets on its own initiative. Due to its own variations in ownership structures, there is a chance that the proportion of female directors will differ, and this was considered appropriate based on the condition of the company in Indonesia. In addition, this research builds on previous studies by grouping company data according to the ownership structure. As a result, this study can provide new evidence to research the influence of women directors and provide an overview of the benefits of having women directors for companies as practitioners.

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## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### *Agency Theory*

Agency theory is used to explain the relationship between the principal and the agent who is authorized by the principal to make decisions (Rankin et al., 2018). However, the granting of such authority often causes a conflict of interest between the principal and the agent (Jensen & Meckling, 1976). These problems increase monitoring costs, bonding costs, and residual losses (Donaldson & Davis, 1991). Companies can avoid conflicts of interest and reduce agency costs, as well as protect shareholders, with strong external and internal governance mechanisms (Davis et al., 1997; Wagana & Nzulwa, 2016). Based on agency theory, the Board of Directors is an agent and gender determination for the Board of Directors can also affect the level of supervision in the company. Female directors can become agents who can protect principals so that they can become a new internal governance mechanism for the company. In addition, women were also found to have better abilities related to supervision due to their independent thinking (Adams & Ferreira, 2009). Therefore, female directors can reduce agency costs and can improve decision making which can reduce the probability of financial distress (García & Herrero, 2021).

### *Women's Leadership Theory*

Gender differences can lead to dissimilarity in a person's behavior, which often results in gender stereotypes (Utaminingsih, 2017). Based on Eagly and Johannesen-Schmidt (2001), there are differences in the leadership styles adopted by men and women related to the characteristics of agent and communal. Agent characteristics tend to exist in men who are judged to be more assertive, controlling, and confident. On the other hand, women tend to have communal characteristics that are considered to be more concerned about the welfare of others. Suppose it is related to the working field. In that case, co-operation is related to the absence of excessive self-confidence, accepting other people's directions, being supportive, and contributing to problem-solving. In addition, women score higher than men on all four dimensions of transformational leadership, which are idealized leadership, inspirational motivation, intellectual stimulation, and individualized stimulation (Chen & Kao, 2022; Goethals & Hoyt, 2017). Transformational leadership is the opposite of transactional leadership. Women use contingent rewards, meaning that they give rewards to the employees if they perform as expected. In contrast, men more often use management by exception, meaning that they tend to address followers when they have failed to do as expected and point out errors and shortcomings (Goethals & Hoyt, 2017).

### *Resource Dependence Theory*

Resource dependence theory is a theory that explains the role of the Board of Directors as a company resource and focuses on appointing organizational representatives who can be a

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means to access important resources to achieve company success (Johnson et al., 1996; Wagana & Nzulwa, 2016). The board's size and composition are decided based on the rational response of an organization to the external environment's conditions, the company's current strategy, and its previous financial performance (Pearce & Zahra, 1992; Pfeffer, 1972).. The right selection of directors can provide advantages, namely the provision of information in the form of advice and consultation, access to information resources between the company and the company's external environment, exclusive access to resources, and legitimacy.

The gender composition of the Board of Directors will lead to differences in accessing internal and external parties, as well as differences in the quality of advice that can encourage the company. This allows the company to be able to access critical resources from diverse suppliers, as well as to be able to create new products according to customers' needs as a result of different connections to many market segments. Thus, gender distinction in the Board of Directors is a good way for the company to gain advantages from the capability of providing advice, access to information and resources, and legitimacy, which will automatically improve the company's performance and can mitigate financial distress (Yousaf et al., 2021).

***Tokenism Theory***

The proportion of a group also plays an important role in providing benefits to an organization. Based on tokenism theory, those whose proportion is less than 15% of a group's total are expected to experience various hardships in the workspace, such as isolation, lack of trust, and discomfort (Kanter, 1977; Maass & Clark, 1984; Nemeth & Wachtler, 1983). As a result, the minority tends to be left out, especially in the decision-making process. However, when the size of the minority group increases and reaches a certain threshold, it gains trust, and women can bring the majority's benefits to the organization. Women who are minorities in male-dominated environments have few opportunities to influence the organization until they become a significant minority (Kanter, 1977). Hence, the proportion of female directors in companies also plays an important role in showing the effectiveness of appointing female directors in the company. When they reach certain levels of threshold, the organization may start perceiving the benefits.

***Corporate Governance and Female Directors***

Governance is a combination of mechanisms established to ensure that management, as the company's managing agent, can benefit stakeholders, the principals. The Board of Directors is the highest governing body in a company and is responsible for corporate governance, from setting strategic objectives to reporting to shareholders (Cadbury, 1992; Goergen, 2012). Based on resource dependence theory, the Board of Directors is responsible for providing consultation and legitimacy to the company, as well as linking the company with other organizations and supervising managers on behalf of shareholders according to agency theory (Fama & Jensen,

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1983; Pearce & Zahra, 1992; Pfeffer & Salancik, 1978). The theory explains that a diverse board can improve the quality of strategic decision-making and expand access to more diverse resources (Ali et al., 2014; Hillman et al., 2000; Yousaf et al., 2021). Board diversity is typically measured along two dimensions: demographics and cognitive. Demographics are related to gender, race, and age, while cognitive diversity is related to education, work background, skills, compensation, and the characteristics of board members (Hafsi & Turgut, 2013; Hillman et al., 2000; Milliken & Martins, 1996).

Gender at the Board of Directors plays an important role in shaping individual risk tendencies, which can lead to the quality of decision-making being influenced by the risk appetite of top decision-makers, especially directors (Gilliam et al., 2010; Neelakantan, 2010). Agency theory explains that the presence of female and male directors can increase oversight, which can reduce the probability of financial distress. In addition, women's leadership theory also explains that female directors tend to adhere to communal characteristics, and women's leadership styles lead to a collaborative leadership style so that decision-making for the company will also be affected, which can lead to a decrease in the probability of financial distress (Burns, 1978; Eagly & Johannesen-Schmidt, 2001).

***State-Owned Enterprises and Female Directors***

In Indonesia, companies owned by the state are called State-Owned Enterprises (SOEs). Based on Law No. 19 of 2003 (Indonesia, 2003), a company classified as SOE is in the form of a Limited Liability Company with all or a minimum of 51% of the total shares capital of the company owned by the Republic of Indonesia. SOE capital comes from separated state assets, and the capital participation can be added and subtracted in accordance with government policies originating from the State Revenue and Expenditure Budget, reserve capitalization, and other sources.

Based on Kementerian Badan Usaha Milik Negara (2021), the Minister of SOEs, Mr. Erick Thohir, has set a target that there must be a minimum of 25 percent women on the Board of Directors by the end of 2023. This target was set as the percentage of women occupying Board of Directors' seats in global companies has reached 30%. In addition, the targets were also set in accordance with the plan to realize the Sustainable Development Goals that have been globally agreed upon and signed by the Indonesian government (Kementerian Pemberdayaan Perempuan dan Perlindungan Anak Republik Indonesia, 2017).

In recent years, many SOEs have been in a state of financial difficulty. At least nine SOEs in the various industrial sectors and three SOEs in the agricultural sector are prone to bankruptcy (Santoso, 2019). The causes are due to the lack of current assets (Aviannie et al., 2020; Santoso, 2019). The Ministry of SOEs set the target based on the studies that found the effectiveness of women's presence in leadership positions. The results of an ILO survey of 400 companies in Indonesia show that 77% of companies benefited from having female directors as they could

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encourage efforts to increase company profits and productivity (Fambudi & Fitriani, 2019; International Labour Organization, 2020; Iswadi, 2016; Kementerian Badan Usaha Milik Negara, 2021).

***Financial Distress***

Financial distress is the last indicator before a company goes bankrupt. It can be an early warning so that managerial action can be accelerated before the problem occurs (Platt & Platt, 2002). The well-known predictive model of financial distress that is often used by researchers, practitioners, and academics in the accounting literature is the Altman Z-Scores model, which uses multiple discriminant analysis (Fatmawati, 2012). This model uses five standard ratios that are considered to predict corporate bankruptcy (Altman, 1968). However, the Altman Z-Scores model has several limitations, namely that the logistic regression model on a small sample cannot provide accurate results (Balcaen & Ooghe, 2006). The Altman Z-Scores model with the logistic regression model can be done only with a large number of samples. The large number of observation samples results in very poor accuracy (Platt & Platt, 2002; Premachandra et al., 2009). This shows that the logistic regression model on a small sample of observations can lead to bias that can have an impact on the accuracy of the results.

Other financial distress prediction models that are often used in research are the Zmijewski model, the Grover model, the Ohlson model, and the Springate model, which each have their advantages and disadvantages. The Zmijewski model has the advantage of using a large number of sample companies and emphasizing the company's ability to pay debts, while the Altman model, Springate model, and Grover model emphasize the company's ability to generate profitability. The weakness of this model is that the Zmijewski model is not sensitive to changes in time and is not sensitive to various situations of financial distress contained in the sample company. The same finding is also found in the Ohlson model (Grice & Dugan, 2001).

The accuracy of the Zmijewski model in explaining financial distress in Indonesian companies is 8.1%, while the Altman model can only explain the probability of financial distress by approximately 12%. The Grover model can explain 42.8% of companies experiencing financial distress and the Springate model has the highest accuracy of 69.7% in predicting financial distress (Gupita et al., 2020; Permana et al., 2017; Shalih & Kusumawati, 2019; Supriati et al., 2019). Although the Grover model has a fairly high accuracy compared to the Springate model, the Grover model does not have a ratio that takes into account the company's ability to pay its debts (Edi & Tania, 2018). Finally, the Ohlson model was found to have an accuracy of 6.70% (Widiasmara & Rahayu, 2019). The Springate model was proposed by Gordon L. V. Springate in 1978 which was formed from 19 ratios and selected the four best ratios that can predict financial distress. The advantage of this model is that there is a ratio measuring the company's ability to pay off its short-term obligations. This ratio is important because the indicator of a company

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experiencing financial distress begins when the company has difficulty meeting its short-term obligations (Gupita et al., 2020).

***Hypothesis Development***

In general, based on Article 94, paragraph 1, of Law No. 40 of 2007 (Indonesia, 2007), it is written that members of the company's Board of Directors are appointed under the resolutions of the General Meeting of Shareholders (GMS). Shareholders are free to determine the presence of female directors because the law does not specify the gender of directors and only requires a minimum of two directors in a company. Until 2021, there is only an obligation from the Ministry of Women's Empowerment and Child Protection that requires the provision of equal employment opportunities for men and women. In addition, the state of Indonesia also has signed the Agenda for the Sustainable Development Goals on September 25, 2015.

One of the goals to be achieved is the fifth goal, which is related to achieving gender equality and empowering all women and girls. One of the targets is to ensure that all women can participate fully and have equal opportunities for leadership at all levels of decision-making in political, economic, and public life (International NGO Forum on Indonesian Development, 2017). The indicator that determines the success of the target is based on the proportion of women in managerial positions (United Nations, 2022). One of the efforts made by the Indonesian state is to appoint female directors in SOEs have been seen in recent years, such as PT Pertamina and PT Bukit Asam Tbk. Not only that, in the last two years, the Ministry of SOEs, as the state representative in managing SOEs in Indonesia, has also set targets related to female directors for 2021 and 2023. The appointment of female directors is based on the basis that female directors can provide added value to organizational performance according to research from various institutions (Kementerian Badan Usaha Milik Negara, 2021). On the other hand, non-SOEs do not have regulations that require meeting these targets, so the appointment of female directors is an initiative of each company to participate in realizing these targets.

However, all companies may appoint female directors, both in SOEs and in non-SOEs, because the presence of women on the Board of Directors can increase oversight, reduce agency conflicts, and become more critical so that the quality of decision-making can be improved (Adams & Ferreira, 2009; García & Herrero, 2021; Li & Zhang, 2019). In addition, women are also judged to avoid risk, possess less self-confidence, and be transparent, which can lead to less risky decision-making so that the probability of financial distress can be lowered (Chen et al., 2019; Cho et al., 2021; García & Herrero, 2021; Kristanti et al., 2016; La Rocca et al., 2020; Li & Zhang, 2019).

Nevertheless, many previous studies have shown mixed results. A study using a sample of companies in the United States and Indonesia found that there was no significant effect between female directors and the company's financial distress (Ariska et al., 2021; Salim & Dillak,

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2021; Sila et al., 2016). This is because, although there has been a significant increase in the involvement of women, there are still many companies that do not believe in involving women as directors of the company (Ariska et al., 2021). In addition, female directors do not affect the probability of financial distress due to an imbalanced number of female and male directors as seen in the presence of only six female directors, while the remaining 162 directors are men in SOEs (Mentari & Sulistyowati, 2017; Salim & Dillak, 2021). Other studies have also found the positive impact of board diversity on company performance is only effective when the work environment is dominated by women and there is a scarcity of resources (Wellalage & Locke, 2013).

The appointment of female directors can cause the company to have high communication costs due to emotional conflict, and more communication is needed. The results of research conducted by Wellalage & Locke (2013) found that female directors tend to be more selfish than male directors, which often causes conflicts on the board, which leads to a decrease in company performance. In addition, the presence of female directors means that there is a greater need for time and effort to make joint decisions. This allows companies to lose their competitive advantage (Wellalage & Locke, 2013).

Nonetheless, based on women's leadership theory, the female leadership style is transformational and tends to have communal characteristics, such as less self-confidence, accepting other people's directions, supporting and calming others, contributing to problem-solving, and being people-oriented, which can lead to differences in decision-making (Burns, 1978; Eagly & Johannesen-Schmidt, 2001). This is also supported by the results of research which found that female directors tend to be risk averse, more independent of their thoughts, and more ethical than men and can become supervisory agents that improve internal governance mechanisms to protect principals and reduce agency costs (Adams & Ferreira, 2009; García & Herrero, 2021; Jensen & Meckling, 1976). Resource dependence theory also explains that with the presence of female directors, companies will be able to improve the quality of advice, access to information, a wider variety of suppliers, and legitimacy (Ali et al., 2014; Hillman et al., 2000). Thus, the first hypothesis of the study is

**H1.** *Female directors have a negative effect on the probability of a company's financial distress*

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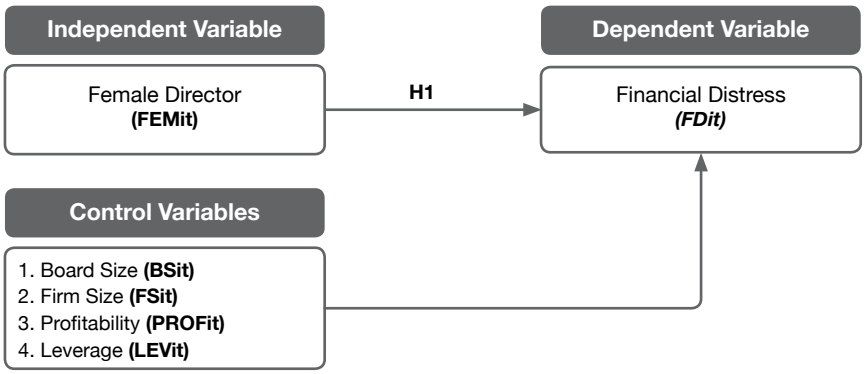
### *Theoretical Framework*

Figure 1 shows the research framework that aims to describe the line of thought that will be carried out in this research.

**Figure 1. Theoretical Framework**




## RESEARCH METHODOLOGY

### *Population and Sample*

This research uses a sample of companies listed on the Indonesia Stock Exchange (IDX) with non-financial industry categories according to the IDX Industrial Classification (IDX-IC) from 2016 to 2021. Due to different laws and ratio calculations in the financial industry, the financial sector is not included in the research sample. As a result, the total number of companies that can be sampled is 656 companies or 3,217 observations. 20 out of the total 656 companies are state-owned enterprises, with the remaining being privately held businesses. However, because not all companies listed on the IDX give complete information that meets research needs, companies with missing information on directors and financial data from 2016 to 2021 are omitted as research samples. Based on these criteria, the research sample for this research consisted of 581 companies or 2,840 observations. This is due to the fact that 24 companies have not released financial or annual reports in the previous six years, and 51 other companies have not released financial reports as of the information collection deadline of June 1, 2022. Of the total number of companies chosen as samples, 19 are SOEs, while the rest 562 are non-SOEs. Each sample data group comprises 114 observations and 2,726 observations.

### *Variable Measurement and Operation*

The dependent variable in this research is financial distress, as measured by the Altman

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Z-Scores, as in prior research by (García & Herrero, 2021). The research will calculate Altman Z-Scores using the formula below:

$$Z = 0.717X1 + 0.847X2 + 3.107X3 + 0.420X4 + 0.998X5$$

Description: X1= Working Capital/Total Assets; X2= Retained Earnings/Total Assets; X3= Earnings Before Interest and Taxes/Total Assets; X4= Shareholders' Equity/Total Liabilities; X5= Sales/Total Assets (Subramanyam, 2009).

Besides using the Altman Z-Scores model, this research also uses the Springate model which has proven to be more suitable for the conditions of companies in Indonesia compared to the Altman Z-Scores model (Edi & Tania, 2018; Gupita et al., 2020; Mulyati & Ilyasa, 2020; Permana et al., 2017; Shalih & Kusumawati, 2019). The following is the formula from Springate that will be used in the research:

$$S = 1.03A + 3.07B + 0.66C + 0.40D$$

Description: A = Working Capital / Total Assets; B = Net Profit Before Interest and Taxes / Total Assets (Leverage); C = Net Profit Before Taxes / Current Liabilities (Liquidity); D = Sales / Total Assets (Liquidity) (Wedley and Wyckham, 1984).

This variable uses a dummy variable for both Altman Z-Scores and Springate because the results are in the form of categories. If the results of the calculations using the Altman Z-Scores show a value of greater than 2.9, it indicates that the firm is in a safe zone, meaning the chance of the company is low. If the value is less than 1.23, the company is in a distress zone because there is a high probability that it will experience financial troubles. The value ranges from 1.23 to 2.9 for businesses that fall into the gray area. For the Springate model, dummy variables are also used. If the Springate computation yields a value more than 0.862, the company is likely to be in financial trouble. This also applies the other way around.

The main independent variable in this study is female directors as measured by the percentage of female directors to the total number of directors (Cho et al., 2021; García & Herrero, 2021; La Rocca et al., 2020; Loukil & Yousfi, 2016). Furthermore, this research includes a control variable that has been shown in prior research to have a significant effect on the dependent variable. The control variables in this study are boards size, which is measured by counting the number of company directors, firm size which is measured using the logarithm of total assets, profitability which is calculated by dividing EBITDA by total assets, and leverage measured by dividing total debt by total assets.

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***Data Analysis Method***

The first method of analysis carried out is descriptive statistics to tidy up, summarize, and present the data informatively (Ghozali, 2018; Lind et al., 2015). The classical assumption test is not carried out because the characteristics of logistic regression are different from those of linear regression. However, the multicollinearity test is still performed to detect the perfect correlation between independent variables. The third method is hypothesis testing, consisting of a likelihood ratio test, Wald test, and coefficient of determination test ($R^2$) with binary logistic regression analysis and penalized maximum likelihood.

Based on Gujarati and Porter (2003), the likelihood ratio test has the same function as the F statistical test, which is to determine the significance of the relationship between all the independent variables and the dependent variable of the study. However, since the likelihood ratio test is suitable for a large population. Hence, the penalized maximum likelihood is used for a small number of observations. While the Wald test is conducted to determine the effect of each independent variable on the dependent variable (Ghozali, 2018). Lastly, the study uses McFadden $R^2$ to indicate that the model is fit (Hensher & Stopher, 2021). The last method is the robustness test, which is used to compare the influence of female directors on the probability of financial distress in SOEs and non-SOEs.

***Research Model***

The research model used to find the influence of female directors on the probability of financial distress in companies listed on the Indonesia Stock Exchange is as follows:

$$FD_{it} = ln\left(\frac{FD_{it}}{1-FD_{it}}\right)$$

$$= \beta_0 + \beta_1 FEM_{it} + \beta_2 BS_{it} + \beta_3 FS_{it} + \beta_4 PROF_{it} + \beta_5 LEV_{it} + \epsilon_{it}$$

FD is the dependent variable related to financial distress as measured by a dummy and measured by two models. In the Altman Z-Score model, the value is 1 if the result of the Altman Z-Scores calculation is below 2.9 and the value is 0 if the result of the Altman Z-Scores calculation is above 2.9. In this research, the Z-Score was divided into two categories, which are the safe zone and the distress zone. Based on previous studies, companies that are outside the safe zone are considered to be in the distress zone (Shahwan, 2015; Sun et al., 2015). Hence, even though the companies are in the gray zone, they will be considered to be in the distress zone. In the Springate model, the value is 1 if the Springate calculation result is below 0.862 and the value is 0 if the Springate calculation is above 0.862. FEM is an independent variable measured by the percentage of female directors on the Board of Directors each year. For control variables, BS is the number of directors on the board, FS is the logarithm of total assets, PROFIT is EBITDA divided by total assets, LEV is total long-term debts, and short-term debts are divided by total assets. i denote company, t denotes year t, and $\epsilon$ is an error.

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## RESULTS AND DISCUSSION

### *Descriptive Statistics*

Based on the descriptive statistical table, the total number of observations (N) was 2,840. For the two-category Altman Z-Scores model, the average value for financial distress is 0.7479 with a standard deviation of 0.4343, while for the Springate model, it is 0.5711 with a standard deviation of 0.4950. These findings show that the majority of the companies listed on the IDX are in a distress zone. Even though the Altman Z-Scores model, which divides organizations into three categories, places the majority of companies in the gray zone, previous research has classified businesses outside of the safe zone as being in a distress zone. Therefore, the average value is 1.0683 and the standard deviation is 0.7537, which implies that the majority of the organizations included in the gray zone will actually be included in the distress zone in this study. As a result of the descriptive statistical test, it was revealed that companies listed on the IDX are still dominated by male directors with a high probability of financial distress, as measured by the Altman Z-Scores and Springate models. These companies are typically large, yet there are only four to five directors with low levels of profitability. However, the company's average leverage remains low.

**Table 1. Descriptive Statistical Test Results**

| Variable | N | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| FDAltman Biner | 2,840 | 0.7479 | 0.4343 | 0 | 1 |
| FDAltman Multinomial | 2,840 | 1.0683 | 0.7537 | 0 | 2 |
| FDSpringate | 2,840 | 0.5711 | 0.4950 | 0 | 1 |
| FEM | 2,840 | 0.1449 | 0.1874 | 0 | 0.83 |
| BS | 2,840 | 4.4053 | 1.8359 | 2 | 14 |
| FS | 2,840 | 14.6495 | 1.7552 | 4.3559 | 19.7217 |
| Profit | 2,840 | 0.0829 | 0.0986 | -0.2602 | 0.4428 |
| Lev | 2,840 | 0.2864 | 0.3191 | 0 | 2.4007 |

Source: Data Processing Results, 2022

**Variable Descriptions:** FDAltman Biner = *Financial Distress* measured by Altman Z-Score model that divided into two categories; FDAltman Multinomial = *Financial Distress* measured by Altman Z-Score model that divided into three categories; FDSpringate = *Financial Distress* measured by Springate model; FEM = *Female Director;* BS = *Board Size*; FS = *Firm Size*; Profit = *Profitability*; Lev = *Leverage*

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### *Multicollinearity Test*

A multicollinearity test is performed on each sample of observations, namely samples of all companies, SOEs, and non-SOEs, with a correlation test and VIF test. The correlation test shows that there is no multicollinearity because the correlation value between independent variables is less than 0.80. In addition, these results are also supported by the average VIF value which is less than 10.

### *Hypothesis Test Results and Discussion*

The likelihood ratio (LR) test with the dependent variable regression model Altman Z-Scores and Springate yields a value of prob > chi2 of 0.000, indicating that the independent variables in the regression model can affect the dependent variable significantly. The Wald test is also used in this research, as seen in tables 2 and 3. The table shows that women directors do not have a significant effect on the probability of companies experiencing financial distress with either the Altman Z-Scores and Springate models because the P value > |z| is more than the significance level at 1%, 5%, or 10%. This also applies to board size as measured by the Springate model. However, all study control variables have a significant effect at the 1% and 5% levels specifically for board size. The next test is the coefficient of determination which shows the value of adjusted McFadden for the Altman Z-Scores model and the Springate model is 0.376. This table shows that only 37.6% of the influence on the dependent variable can be explained by the variables used in the calculation model using Altman Z-Scores and Springate.

**Table 2. Results of Hypothesis Testing 1 with Altman Z-Scores Model**

| FDAltman | Coefficient | Standard Error | z | P>\|z\| |
|---|---|---|---|---|
| FEM | 0.1335 | 0.0286 | 0.47 | 0.6410 |
| BS | 0.0928 | 0.0375 | 2.48 | 0.013** |
| FS | 0.1288 | 0.0430 | 3.00 | 0.003*** |
| Profit | -8.6940 | 0.6829 | -12.73 | 0.000*** |
| Lev | 10.7713 | 0.5080 | 21.20 | 0.000*** |
| Constant | 2.2269 | 0.5282 | -4.22 | 0.000*** |

Source: Data Processing Results, 2022

**Variable Descriptions:** ***, **, * significant at 1%, 5%, dan 10% respectively; FDAltman = *Financial Distress* measured by Altman Z-Score model; FEM = *Female Director*; BS = *Board Size*; FS = *Firm Size*; Profit = *Profitability*; Lev = *Leverage*

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**Table 3. Results of Hypothesis Testing 1 with Springate Model**

| FDSpringate | Coefficient | Standard Error | z | P>\|z\| |
|---|---|---|---|---|
| FEM | -0.0414 | 0.2722 | -0.15 | 0.879 |
| BS | -0.0454 | 0.0336 | -1.35 | 0.176 |
| FS | 0.2032 | 0.0383 | 5.31 | 0.000*** |
| Profit | -23.7163 | 1.0206 | -23.24 | 0.000*** |
| Lev | 5.2035 | 0.3065 | 16.98 | 0.000*** |
| Constant | -1.7483 | 0.4751 | -3.68 | 0.000*** |

Source: Data Processing Results, 2022

**Variable Descriptions:** ***, **, * significant at 1%, 5%, dan 10% respectively; FDSpringate = *Financial Distress* measured by Springate model; FEM = *Female Director*; BS = *Board Size*; FS = *Firm Size*; Profit = *Profitability*; Lev = *Leverage*

Tables 2 and 3 indicate that neither the Altman Z-Scores nor the Springate models significantly affect the likelihood that a company might experience financial distress. Both models show that an increase in one female director does not affect the probability of the company being in all zones since the average female director is still relatively small. Female directors make up less than 20% of the total. Even though there are more companies with female directors each year, they still make up a small percentage of all directors. Additionally, this research is consistent with the study by Ariska et al. (2021) because 56.6% of companies listed on the IDX have at least had female directors for the past six years, but this percentage does not indicate the average number of female directors. The study found that even though there are now more women serving on Boards of Directors in Indonesia, many companies still do not trust women to serve as corporate directors. Furthermore, the average percentage of female directors in companies with female directors also falls short of 30%. Although there appear to be many companies with female directors, there is still a minority of female directors.

Based on the women's leadership theory by Eagly and Johannesen-Schmidt (2001), women leaders tend to have a transformational leadership style and have communal characteristics that can reduce the probability of companies experiencing financial distress. As a result, having female directors in the organization is essential for its success. However, this theory is not proven by the results that female directors have no effect on the probability of the company being in a state of financial distress with either the Altman Z-Scores or Springate models due to the small number of female directors. Not only that, the existence of female directors as an internal governance

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mechanism that can improve supervision and quality of opinion so that it is useful for reducing the probability of financial distress according to agency theory is also not proven (Adams & Ferreira, 2009).

The findings indicate that male directors are favored by Indonesian corporations over female directors, implying that shareholders, as the party that selects or makes judgments on who is eligible to hold the position of director in the company, may not fully trust women to serve as agents and make decisions for the company. The presence of women as agents in the corporation is not apparent despite the principal appointing female directors, instead, the majority of directorship roles are still held by men. This result is in line with the results of a survey conducted by the ILO in June 2020, which found that women are less likely to be appointed or given promotions to positions of top management or directors compared to men. The results of a survey by the ILO (2020) show that women are mostly represented in support management functions, such as finance and administration, as well as human resources, while men occupy more positions that are considered more strategic in decision-making.

This also can be seen from the phenomenon of Indonesian society that believes men are stronger, more logical, and more assertive so women's abilities are doubted may be the cause of the low number of female directors (Srikandi BUMN, 2021). This viewpoint differs from prior research, which assumed that women were appropriate for positions as directors of companies. Women directors are believed to behave in a way that tends to avoid risk and can lower agency costs, which can reduce the probability that the company would face financial distress (Cho et al., 2021; García & Herrero, 2021; La Rocca et al., 2020; Mohsni et al., 2021). However, public perceptions in Indonesia are more favorable towards male directors than female directors; therefore, the number of female directors remains low, and the impact on the probability of the company suffering financial distress still cannot be seen. This is proven by the fact that attitudes and gender biases in Indonesia continue to hinder women's career advancement in areas like recruitment and promotion, job assignments, training, and mobility (International Labour Organization, 2020). As a result, it is difficult for women in Indonesia to obtain a position as a director in a corporation.

Moreover, the resource dependence theory claims that the presence of female directors might increase the quality of strategy-making related to company problems such as financial distress (Ali et al., 2014; Hillman et al., 2000), which is not supported by this research. The small percentage of female directors is unable to help the business access the resources that are required, which affects the likelihood that the company would face financial distress. As a result, this research confirms the tokenism theory that a limited number of female directors are unable to have an impact on the company's work environment, as indicated by Jurkus et al. (2008) in Wellalage & Locke (2013). The female directors, who are in a male-dominated work environment in Indonesia, could not effectively show benefits to the organization due to their minority status. Based on the tokenism

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theory, minorities tend to be left behind, meaning that the female directors' opinions that could be beneficial to the organization are not considered due to a lack of trust and isolation (Kanter, 1977).

However, this study suggests that the addition of female directors may have a positive impact on corporate performance. This can be seen in both the Altman Z-Scores and the Springate models, which show low average female directors as the probability of the company experiencing financial distress increases. In the safe zone, the average female directors are 15.51% for the Altman Z-Scores model and 15.5% for the Springate model. In contrast, the average number of female directors in the distress zone is 12.78% for the Altman Z-Scores model and 13.69% for the Springate model. This percentage indicates that there is a higher proportion of female directors in companies in the safe zone, however, the effect is not yet visible because female directors are still in the minority which is less than 50%.

Aside from female directors, past studies show that a loss in profitability and an increase in leverage might raise the likelihood of a company having financial troubles (Cho et al., 2021; García & Herrero, 2021; Sila et al., 2016). The results of the two regression models are also the same for the size of the company, which is consistent with the findings of a study conducted by Mentari and Sulistyowati (2017) and Rahmawati and Khoiruddin (2017), which state that the larger the size of the company, the greater the possibility of conflict, and thus the larger the financial problems. However, the regression results for the board size variable show differences between the two models since the Altman Z-Scores measurement yields significant results while the Springate model does not. This disparity is due to the Altman Z-Scores and Springate models' different category categorizations. Most companies that fall into the gray zone according to the Altman Z-Scores model are categorized as safe zones by the Springate model. Furthermore, the average board size in the safe zone and distress zone as measured by the Springate model is not clearly distinguishable, inversely proportional to the Altman Z-Scores model, which has a pretty big average difference for each zone.

Although the study's findings indicate that female directors have no significant influence, this study can only address the presence of female directors as measured by the percentage of female directors in a company. The features of female directors when making decisions that could affect the likelihood that the company will experience financial troubles have not been explained properly by the research model. This is because previous research shows that the presence of female directors has an influence that is accompanied by the characteristics of women who tend to avoid risk. However, these characteristics cannot be seen from the variables used in this study, so additional variables are needed to complement the existing research model.

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***Robustness Test***

The study also conducts a robustness test to determine the different influences of female directors on the probability of financial distress in SOEs and non-SOEs. In 2021, Mr. Erick Thohir has set up a target for women's presence in the Board of Directors and Board of Commissioner of SOEs which were 15% of female directors in 2021 and 25% in 2023 (Kementerian Pemberdayaan Perempuan dan Perlindungan Anak Republik Indonesia, 2017). In addition, as Indonesia also signed the Sustainable Development Goals on gender equality, SOEs are expected to have the obligation to be an example for non-SOEs to start appointing female directors in their companies, while non-SOEs do not have these obligations. Hence, the robustness test could support the evidence of the role of female directors in the probability of financial distress.

In the robustness test, the research model uses a model with the dependent variable of financial distress measured by the Springate model since the small number of SOE observations causes inaccuracies in the financial distress calculation measured by the Altman Z-Scores model. Based on table 4, female directors and board size do not affect the probability of financial distress in SOEs and in non-SOEs, and profitability has a significant negative effect on the probability of financial distress at a significance level of 1%. The control variables of firm size and leverage do not affect the probability of financial distress in SOEs, while in non-SOEs, the two control variables affect the probability of financial distress at a significance level of 1%.

**Table 4. Robustness Test**

| | SOE | | Non-SOEs | |
|---|---|---|---|---|
| **FDSpringate** | **Coefficient** | **P > \|z\|** | **Coefficient** | **P > \|z\|** |
| FEM | -1.9596 | 0.577 | 0.0187 | 0.945 |
| BS | 0.8639 | 0.107 | -0.0536 | 0.133 |
| FS | 0.2018 | 0.715 | 0.1937 | 0.000*** |
| Profit | -70.8612 | 0.000*** | -23.1490 | 0.000*** |
| Lev | 3.9837 | 0.442 | 5.1129 | 0.000*** |
| Constant | -1.3053 | 0.838 | -1.6340 | 0.001*** |

Source: Data Processing Results, 2022

**+Variable Descriptions:** ***, **, * significant at 1%, 5%, dan 10% respectively; FDSpringate = *Financial Distress* measured by Springate model; FEM = *Female Director*; BS = *Board Size*; FS = *Firm Size*; Profit = *Profitability*; Lev = *Leverage*

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The absence of influence of female directors on the probability of financial distress in SOEs is in line with the results of previous studies conducted by Mentari and Sulistyowati, (2017) and Salim and Dillak (2021). This is due to an imbalance in the number of female and male directors. Although more than 50% of SOEs and non-SOEs have had female directors, the average proportion of female directors is still small, especially in SOEs, where it was less than 6% before 2021 and increased to 12.58% in 2021 in line with the desires of the Ministry of SOEs, Mr. Erick Thohir, based on previous research results that support female directors can provide added value to the company. The same thing also happened to non-SOEs, which had an average proportion of female directors over the last six years ranging from 14.36% to 15.13%. The number of female directors in non-SOEs is higher than that in SOEs, but the higher number of female directors still does not affect the probability of financial distress in non-SOEs due to the small proportion. The results show that the majority of the Board of Directors is still occupied by men, and the signing of the Sustainable Development Goals in 2015 related to gender equality has not been able to encourage the appointment of female directors, both in SOEs and non-SOEs.

Based on the descriptive statistics, the number of SOEs that are in the safe zone is 32 observations, and 82 other observations are in the distress zone. For non-SOEs, the number of companies that are in the safe zone is 1,186, and 1,540 other companies have been in the distress zone for the last six years. The average proportion of female directors in SOEs and non-SOEs which are in the safe zone is 7.22% and 15.77%, while the average proportion of female directors in SOEs and non-SOEs which are in the distress zone is 5.63% and 14.12%. The results of this study are in line with Ariska et al. (2021) who stated that although the involvement of women in the working field has increased in recent years, women are still not trusted to dominate the Board of Directors in companies. Based on the theory of women's leadership, women are considered to have a transformational leadership style and have communal characteristics that can affect financial distress, so the presence of female directors is an important part of the company, but this theory is not proven either in SOEs or in non-SOEs. In addition, if it is based on the agency theory proposed by Jensen and Meckling (1976), female directors can be considered as a governance mechanism in increasing supervision to protect principals and improve the quality of opinions leading to a decrease in the probability of financial distress. However, in practice, principals still do not fully trust female directors as agents in both SOEs and non-SOEs.

The view believed by the majority of Indonesian regarding men who are stronger, rational, and assertive, while women are seen as weak, emotional, motherly, affective, and irrational, can be one of the reasons for the low number of female directors (Srikandi BUMN, 2021). This statement is also supported by the possibility that gender diversity in the Board of Directors causes the need for more time and effort to reach joint decisions so that companies can lose their competitive advantage (Hambrick et al., 1996 and Knight et al., 1999 cited in Wellalage & Locke

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(2013). In the absence of gender equality in the Board of Directors, based on resource dependence theory, female directors will not be able to provide opinions even though they have different experiences and views because female directors are only effective when the work environment is dominated by women (Jurkus et al., 2008 cited in Wellalage and Locke, 2013). The results confirm the tokenism theory, which states that only when the minority reaches certain thresholds, they could influence the organization.

The lack of presence of women in the structure of the Board of Directors in SOEs and non-SOEs causes a lack of evidence to determine the effect of female directors on the probability of financial distress. However, it is possible that female directors may influence the probability of financial distress in SOEs and non-SOEs when the company's Board of Directors has achieved gender equality. On the other hand, the research model used has also not been able to explain the characteristics of female directors, which, according to previous research, can influence decision-making and therefore affect the probability of financial distress. Therefore, additional variables that can capture the characteristics of female directors should be considered in order to explain further the role of female directors and financial distress.

However, the ability of each SOE to obtain profitability is different, so there is a significant negative effect between profitability and the probability of financial distress. Leverage in SOEs does not affect the probability of financial distress because each SOE has a relatively small amount of leverage and is similar among companies. In contrast to SOEs, the size of non-SOE companies tends to be more varied, from small to large. This affects the ability to obtain different profitability and leverage between non-SOEs. Therefore, firm size, profitability, and leverage have a significant influence on the probability of financial distress ((Cho et al., 2021; García & Herrero, 2021; La Rocca et al., 2020; Rahmawati & Khoiruddin, 2017; Sila et al., 2016).

## CONCLUSION, IMPLICATIONS AND LIMITATIONS

Based on the findings of the research, it can be concluded that female directors in companies listed on the IDX have no influence on the probability of financial distress measured by Altman Z-Scores and Springate models. This is because the percentage of female directors as a whole is still relatively low, as can be seen from the average percentage of female directors, which is still less than 20% even though the number of companies that have female directors keeps increasing every year. In addition, the same results are also found in SOEs and non-SOEs. Although the number of state-owned and non-state-owned companies that have female directors is more than 50%, the number of female directors is still a minority. The lack of female directors on the board causes female directors still not be able to show an effective influence on the company. This statement is consistent with the tokenism theory, which claims that the proportion in a group is essential because, in general, the minority is left out, therefore if the number is increased to a

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certain threshold, the results may be visible.

From these results, this research is expected to provide new understandings and views, especially for regulators and companies in Indonesia as practitioners regarding female directors, in particular in fulfilling the Sustainable Development Targets. This study can also serve as a starting point for future research, as it indicated that increasing the number of female directors may lessen the likelihood of companies facing financial troubles. In addition, this study can also be a reference for researchers with similar research topics by completing some limitations of this study.

The research variables used have not been able to represent the characteristics of women who tend to avoid risk because the proportion of female directors is not enough to clearly describe the role of female directors in making decisions that can affect the probability of financial distress in a company. Therefore, further research is expected to include other variables, namely risk-taking which can represent the behavior of female directors who tend to avoid risk. Apart from the characteristics of women, the variables used also do not consider the position of female directors. This study only illustrates the proportion of the number of female directors without paying attention to the positions occupied by female directors. Therefore, this study has not been able to clearly describe the role of female directors based on their positions such as the roles of the president director, vice president director, finance director, human resources director, operational director, and others.

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